REMARKS

The amendments set out above and the following remarks are believed responsive to the points raised by the Office Action dated February 20, 2004, and discussed during the interview with Examiner Marx on August 4, 2004. In view of the amendments set out above and the following remarks, reconsideration is respectfully requested.

As an initial point, Applicants' representative greatly appreciates the courtesy shown her by Examiner Marx, and further appreciates her careful consideration of the arguments presented during the interview.

The Present Invention

The present invention relates to a method of culturing a microorganism for the synthesis of docosahexaenoic acid (DHA) by the microorganism, comprising culturing a microorganism comprising Crypthecodinium cohnii with a compound selected from acetic acid and an acetate ion, the microorganism using the compound as the primary carbon source and synthesizing DHA in the absence of a stationary phase.

The Pending Claims

Claims 34, 37-51, 58, 59, 65, 66, 74-79, and 81-86 are pending, and claim 34 is the sole independent claim. Claims 34, 37-44, 46, and 47 have been amended to describe the invention more clearly. No new matter has been added, the basis for the amended claim language may be found within the original specification, claims and drawings.

The Office Action

Claims 34, 36-51, and 74-82 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 34 and 37-39 have been amended in the manner discussed at the interview, so as to more particularly set out Applicants' invention. For example, claim 34 has been amended to include the limitation of claim 80 and to define the method as comprising culturing Crypthecodinium cohnii. The phrase "or a genetically modified variant thereof" from claim 80 has not been incorporated into claim 34 in response to the Examiner's assertion that the phrase is redundant in that mutants or genetic variants of Crypthecodinium cohnii would still be considered part of the species Crypthecodinium cohnii. Thus, the scope of amended claim 34 is the same as it would have been had claim 80, in its entirety, been incorporated. Claim 37 has been amended to make clearer that the pH is monitored to control

the addition of the compound during culturing. Claims 40-44, 46, and 47 were also amended to more particularly set out Applicants' invention. Thus, it is respectfully submitted that with these amendments to the claims, the bases for rejection under 35 U.S.C. §112 have now been overcome and should be withdrawn.

Claims 34, 36-51, and 74-82 were rejected under 35 U.S.C. §103(a) as being unpatentable over Vazhappilly et al. (hereinafter referred to as "Vazhappilly") in view of U.S. Patent No. 5,407,957 to Kyle et al. (hereinafter referred to as "Kyle") and Du Preez et al. (hereinafter referred to as "Du Preez"). This rejection is respectfully traversed.

The present invention is directed to a method of culturing a microorganism comprising Crypthecodinium cohnii to synthesize docosahexaenoic acid (DHA) in the absence of a stationary phase. Prior to the present invention, and as evidenced by the absence of any teaching in the cited references, it was not known that DHA could be synthesized without the imposition of a stationary phase. Synethesizing DHA in the absence of a stationary phase provides many advantages, as explained in the present specification (e.g., page 15, lines 13-18). For example, one advantage is that the method can be (although it is not required to be) adapted to be a continuous or semi-continuous process. None of the cited references disclose or even suggest synthesizing DHA in the absence of a stationary phase.

According to the Office Action, "Kyle et al. adequately demonstrate the production of DHA with a strain of C. cohnii wherein a carbon source was supplied continuously and the cells were harvested in the substantial absence of a stationary phase". Applicants respectfully disagree.

Kyle discloses a process for producing a single cell edible oil containing DHA. However, as discussed at the interview, Kyle teaches that production of the single cell oil is induced by the imposition of a stationary phase. For example, Kyle discloses, "[p]roduction of the single cell oil is induced in the dinoflagellates by the imposition of a nitrogen deficiency" (col. 5, lines 23-25). Kyle further discloses that a period of oleosynthesis (oil production) takes place for a period of 24 hours following this induction (see e.g., col. 5, lines 35-39). As discussed at the interview, this requirement for the imposition of a stationary phase to induce oil production is consistent with art in the field, but is contrary to the present invention.

In summary, there is nothing in the cited references that would lead one of ordinary skill in the art to culture Crypthecodinium cohnii with acetate or acetate ions *in the absence of a stationary phase* to synthesize DHA.

For the reasons set forth above, reconsideration of the rejection is respectfully requested.

Conclusion

It is believed this response summarizes all the issues discussed during the interview. In view of the amendment and remarks recited herein, the application is considered in good and proper form for allowance, and the Examiner is respectfully requested to pass this application to issue.

If, in the opinion of the Examiner, a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call the undersigned attorney.

Respectfully submitted,

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